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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,748	12/07/2000	Akbar Arab-Sadeghabadi	LIT3-BL99	4786

7590 08/23/2002
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EXAMINER

WANG, GEORGE Y

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 08/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/733,748

Applicant(s)

ARAB-SADEGHABADI ET AL.

Examiner

George Y. Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1,2 and 5-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4 and 9-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adl (U.S. Patent No. 4,834,479) in view of Nakai et al. (U.S. Patent No. 4,345,816, from hereinafter "Nakai").

Adl discloses a pressure vessel (fig. 1, ref. 20) that has a tubular casing (fig. 1, ref. 27) with an internal cavity (fig. 1, ref. 32) capable of withstanding extreme hydrostatic pressures (col. 1, lines 59-66) and temperature (col. 3, lines 28-38), an

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opening in both ends (fig. 1) permitting optical fiber cables (fig. 1, ref. 22, 37), made of core and cladding, to access the cavity, and a plug region (fig. 1, ref. 34), with through-holes (fig. 1, ref. 40) for fiber passage, adjacent the opening. Because the cavity is cylindrical (col. 2, lines 11-16), the cross section of the cavity and the plug that fits into the cavity has a circular cross section. However, the Adl reference teaches a plug region that increases in diameter from the opening, and therefore is not diminishing in diameter or necked down to match the internal cavity cross section as its distance from the opening increases.

Nakai discloses a pressure vessel with a plug region that decreases in diameter from the opening and is necked down to match the internal cavity cross section (fig. 1, ref. 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed a plug region that decreases in diameter from the opening and is necked down to match the internal cavity cross section since one would be motivated to provide sufficient air-tightness and hydraulic pressure resistance (col. 1, lines 23-26). By promoting fluid block, degradation arising from seawater and other environmental factors are optimally eliminated (col. 1, lines 40-44).

3. Claims 9-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adl and Nakai in view of Beyer et al. (U.S. Patent No. 6,212,989, from hereinafter "Beyer").

4. As to claims 9, 11-14, and 17-18, Adl and Nakai disclose a pressure vessel as recited above with a steel plug (fig. 1, ref. 4) that decreases in diameter from the opening and is necked down to match the internal cavity cross section to snugly fastened to form a stop or barrier against the side of the cavity wall and further having a through-hole that provides passage for optical fibers. The reference also teach o-rings (fig. 1, ref. 44, 46, *Adl*; fig. 1, ref. 9, *Nakai*) and adhesives within the through-hole (fig. 1, ref. 5, *Nakai*) to maximize sealing. However, Adl and Nakai fail to specifically disclose a plug made of ceramic adhesive.

Beyer discloses a pressure vessel with a ceramic plug

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a ceramic adhesive for sealing the fiber to a ceramic plug since one would be motivated by optical transparency. Beyer discloses a ceramic plug that is transparent and capable of contributing to optical transmission. Therefore, the use of a ceramic plug or adhesive will serve to support the transmission of optical signals.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a ceramic adhesive for sealing the fiber to a ceramic plug since one would be motivated by ease of manufacture. Adl teaches that a seal without resorting to adhesives is as effective, if not more, than one with adhesive (col. 5, lines 13-19), since Adl recognizes that adhesives, such as epoxies, are subject to failure during use (col. 5, lines 13-19). One of ordinary skill in the art would agree that adhesives are not ideal for sealing effectiveness. Instead, an adhesive would serve

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to enhance the ease of manufacture. For example, just as Adl teaches a beveled through-hole for ease of manufacture (col. 2, lines 35-38), fixation of the fiber to the plug through-hole by using adhesive merely provides permanence after the fiber is aligned and fix in its proper place. Therefore, it would have been obvious to one of ordinary skill in the art to apply an adhesive to secure the fiber after proper alignment just as in the Nakai reference (fig. 1, ref. 5), however with ceramics instead of epoxies, thereby facilitating the manufacturing process for pressure vessels.

5. Regarding claims 10, 16, and 20, Adl and Beyer disclose the pressure vessel recited above. However, the references fail to specifically teach a polymer cap to cover and beyond the external surface of the plug, forming an additional fluid barrier over the surface of the plug.

Nakai discloses a cap (fig. 2, ref. 11) to cover and beyond the external surface of the plug, forming an additional fluid barrier over the surface of the plug.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a cap to cover and beyond the external surface of the plug since one would be motivated to form an additional fluid barrier over the surface of the plug. It is well known in the art that fiber coating are constructed of polymer materials to resist environmental contaminants and as such, it would have been obvious to include a cap for enhanced fluid block and pressure resistance.

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6. As to claims 15 and 19, Adl and Nakai teach a plug region with a through-hole for fiber passage near the opening of the pressure vessel. However, the references fail to specifically teach a threaded, irregular surface region for frictional engagement of a steel plug to a steel cavity.

Beyer discloses a threaded, irregular surface region for frictional engagement of a steel plug to a steel cavity (col. 6, lines 26-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a threaded, irregular surface region for frictional engagement of a steel plug to a steel cavity as suggested by Beyer since one would be motivated by optimum sealing capability. The use of threads (fig. 2A, ref. 40) on high-strength steel facilitates the attachment and the sealing of the irregular-surfaced plug to the cavity (col. 6, lines 26-40). This engagement of pressure vessel components ensures secure fitting by maximizing frictional forces (col. 6, lines 41-46).

Response to Arguments

7. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 703-305-7242. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


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gw

August 13, 2002


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
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